

species, which is described as retracting itself when disturbed with extreme rapidity into its tube.

NOTE ON A CURIOUS INSTANCE OF SYMBIOSIS.

By WILLIAM A. HASWELL, M.A., B.Sc.

In the June before last I obtained with the dredge off Thursday Island, in a depth of four or five fathoms, specimens of a branching species of *Cellepora*, which was dotted over with small red specks. On examining these more minutely, I found each to consist of a minute *Actinid* lodged in a cylindrical pit excavated in the substance of the polyzoarium and projecting, when expanded, about a quarter of an inch from the surface of the latter. Each of the pores is about a twentieth of an inch in diameter; they are cylindrical and tolerably smooth, and in most cases the orifices are furnished with a low projecting rim. When they are traced backwards into the substance of the *Cellepora* two are frequently found to unite, and very often they eventually open into the cavity occupying the centre of the thicker branches. They very often extend in this way through a distance many times greater than the length of the *Actinid* itself, and, as the latter is provided with no means by which it can retract itself into the interior, this long canal must be the result of the simultaneous growth of the little anemone and the *Cellepora* in which it is lodged.

This singular phenomenon is specially interesting on account of the light which it throws on the structure of some very problematical-looking species of Bryozoa, one of which I described not long ago under the name of *Sphæropora fossa*.* In this species the bryozoarium is spherical, slightly compressed, one pole being

* Mr. Waters, whose authority on the subject of Bryozoa is probably as great as that of any living zoologist, regards the form of the cells as not being sufficiently distinctive to justify the separation of this species from *Cellepora*.

always characterised by the presence of a deep cylindrical pore running in the direction of the axis, but not quite reaching to the opposite pole. This pit is always well-defined and uniformly cylindrical, and it is difficult to explain its nature unless we suppose that it was occupied by a minute *Actinid* similar to those already described. None of the specimens which I have seen exceeded an eighth of an inch in diameter, and most of them, from their worn appearance, must have been dead when dredged, so that there would seem to be a tendency in this species to arrest of growth and death at a certain definite stage of growth. This species, it is to be remarked, differs entirely in the nature of its zoëcia from the branching species already mentioned, which is a normal *Cellepora*.

A species very nearly related in the peculiar form of the cells of *C. fossa* was dredged off Port Stephens, at depths of 20 to 30 fathoms. The form of the bryozoarium in this case is usually that of an elongated cone, a third of an inch to half an inch in length, with a pit, exactly like that occurring in *C. fossa*, in the centre of the base; but sometimes it has the form of a circular plano-convex disk, a third of an inch in diameter, with cells on both sides and without a pit, while in other cases the shape is more irregular, subhemispherical or the like, but never larger than a pea.

It seems very likely that the first-mentioned species starts from an early stage resembling *C. fossa* or its ally, a group of cells surrounding a single young *Actinid*; as the zoarium increases and the cells grow round the mouth of the cavity occupied by the latter, the canal is constantly being elongated as the sea-anemone remains at its orifice, and thus prevents it from being encroached upon by the multiplying cells. Sometimes the sea-anemone* gives off a lateral bud, and at this point the canal is seen to branch,

* I sent specimens of the *Actinid* to Prof. Mosely of Oxford, who will describe them.

and by degrees, by the simultaneous growth of the *Bryozöon* and the Sea-Anemone, such a complex organism as I have described is produced.

NOTE ON THE SEGMENTAL ORGANS OF *Aphrodita*.

BY WILLIAM A. HASWELL, M.A., B.Sc.

Having recently, for the first time had the opportunity of examining specimens of *Aphrodita* in the living state, I have been able to study the structure of the segmental organs, which I find to differ in no essential point from those of *Polynoë* as lately described by me.* I have it on the authority of Pagenstecher,† that the external apertures of these organs in *Aphrodita* were known to Treviranus. They have probably been noticed by numerous observers since,‡ but the true arrangement of the organs themselves seems never to have been made out,§ and entirely erroneous descriptions of them have, as I have previously had occasion to notice, been published and accepted. The external apertures are situated, as in *Polynoë*, on the ventral surface close to the bases of the parapodia; but there is no perforated tubercle or cirrus as in the latter genus. The segmental organs themselves consist of small, flattened, somewhat sigmoid, reddish-yellow sacs, situated in contact with the ventral wall of the body a little

* Proc. Linn. Soc., N.S.W., vol. vii., p. 262, and 'Zoologischer Anzeiger,' 1882.

† Allgemeine Zoologie, Theil iv.

‡ Quatrefages among the number—He says (Hist. Nat. des Annelés, I., p. 109) "Chez une Aphrodite hispide mâle, j'ai vu le sperme sortir, sous la forme d'un filet blanc, de la base de la rame inferieure d'un seul côté du dix-neuvième anneau."

§ Cosmovici in a paper on the segmental organs of Annelides published in the 'Archives de Zoologie Experimentale et Generale' which I have not seen, has (as I learn from an abstract in the Journ. R. Micro. Soc., vol. iii., pp. 635 and 949.) described the segmental organs of the allied genus *Hermione*.